

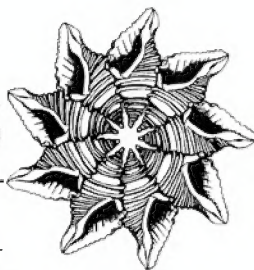
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thomas@nerite.com conchologistsofamerica.org

American **CONCHOLOGIST**



Quarterly Journal of the Conchologists of America, Inc.

CONCHOLOGISTS



OF AMERICA, INC.

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world. In 1995, COA adopted a conservation resolution: Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.

OFFICERS

President: Harry G. Lee
4132 Ortega Forest Dr.
Jacksonville, FL 32210-5813
shells@hglee.com

Vice President: Karlynn Morgan
3089 Shannon Drive
Winston Salem, NC 27106-3647
karlynnmorgan@earthlink.net

Treasurer: Steven Coker
202 Canyon Oak Dr.
Lake Jackson, TX 77566-4599
(979) 297-0852
shellman7000@sbcglobal.net

Secretary: Phyllis Gray
1212 S. Eola Drive
Orlando, FL 32806-2218
(407) 422-0253
phyllis.gray@amecfw.com

Membership: Linda Powers
2700 N. Beach Rd. Unit D106
Englewood, FL 34223-9223
linda.powers1@gmail.com

Trustee: Everett Long
422 Shoreline Drive
Swansboro, NC 28584-7204
nlong3@earthlink.net

Editor: Thomas E. Eichhorst
4528 Quartz Dr. N.E.
Rio Rancho, NM 87124-4908
(505) 896-0904
thomas@nerite.com

Historian: Alan Gettleman
2225 Tanglewood Lane
Merritt Island, FL 32953-4287
(321)-536-2896
lychee@cfl.rr.com

Website Administrator:
Marcus Coltro
1688 West Avenue apt 205
Miami Beach, FL 33139
marcus@femorable.com

Immediate Past President: José Leal
3075 Sanibel-Captiva Road
Sanibel, FL 33957-1580
(239) 395-2233
jleal@shellmuseum.org

Endowments Director: Donald Dan
6704 Overlook Drive
Ft. Myers, FL 33919-6426
(239) 481-6704
donaldan@aol.com

Awards Director: Vicky Wall
303 Wall Rd.
Mayodan, NC 27027-8225
vwallsheller@gmail.com

Convention Coordinator: Anne Joffe
1163 Kittiwake Circle
Sanibel, FL 33957-3605
sanibelchiton@aol.com

Member at Large: Amelia Ann Dick
378 Pagan Rd.
Smithfield, VA 23430-1520
amelia-ann@msn.com

Member at Large: Doug Wolfe
109 Shore Dr., Shell Landing
Beaufort, NC 28516-7861
(252) 728-3501
dawolfe@ec.rr.com

Member at Large: Ed Shuller
409 S. Carroll Street
Apex, NC 27539-5360
eshuller@mindspring.com

Academic Grants Chairwoman:
Jann Vendetti
Twila Bratcher Endowed Chair in
Malacological Research
Nat. Hist. Museum of L.A. County
900 Exposition Blvd.
Los Angeles, CA 90007
jannvendetti@yahoo.com

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Editor:

Tom Eichhorst
4528 Quartz Dr. N.E.
Rio Rancho, NM 87124-4908
(505) 896-0904
thomas@nerite.com

Advertising Manager:

Amelia Ann Dick
378 Pagan Road
Smithfield, VA 23430-1520
(757)-357-9686
amelia-ann@msn.com

EDITORIAL BOARD

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In This Issue

Editor's comments	3
Valid molluscan taxa proposed by Rev. John Lightfoot in the "Portland Catalogue".... and a reprieve for Daniel Solander by Harry G. Lee & Thomas E. Eichhorst	4
Bay scallops: very pleasing to the eye by Stephen T. Tettelbach	8
CAVE BEAUTIES by S. Peter Dance & Simon P. Aiken	16
The <i>American Conchologist</i> Index Project by Bruce Neville	20
COA Captiva Welcome Party	21
COA Captiva list of speakers by Carole Marshall	22
COA Academic Grants 2019 by Jann Vendetti	23
Dealer Directory	24
" <i>Liguus</i> : The Flamboyant Tree Snails" book review by T. Eichhorst	26
"The Art of the Living Mollusk" book review by T. Eichhorst	27
Conchologists of America – Annual Business Meeting by Phyllis Gray	28
2019 Shell Shows and Related Events (Update) by Viki Wall	29
Panama, 2019: And we did some shelling by John Reaves	30
COA Award Winners	
Astronaut Trail	31
Broward	32
St. Petersburg	33
An update on sinistrality by Thomas Eichhorst	34

Editor's comments: This issue revisits the Portland Catalogue and the taxa within by Harry Lee and Tom Eichhorst. Next we are presented a display of color and pattern found in northern bay scallops by Stephen Tettelbach. Then we have a chance to discover rarely seen micromolluscan troglodytes by Peter Dance and Simon Aiken. Bruce Neville brings us up-to-date on the *American Conchologist* index project. Carole Marshall gives us a last minute update to COA Captiva and Jann Vendetti presents the COA Grant recipients for 2019. We have a couple of great books reviewed and both the minutes of the 2018 COA business meeting by Phyllis Gray and an update to the 2019 shell show schedule by Vicky Wall. Last, this issues closes with a quick spotlight on collecting in Panama by John Reaves, some shell show highlights, and a look at sinistrality.



Erronea erronea (Linnaeus, 1758) in normal coloration and pattern. Image courtesy of Charles Rawlings.

Front cover: *Erronea erronea* (Linnaeus, 1758), 25 mm, the so-called blue form from Broome, Western Australia, sometimes called *Erronea erronea azurea* Schilder, 1968. This subspecies is carried as valid by WoRMS but still not accepted by some. Photograph by Simon Akin (see his article with co-author Peter Dance on page 16). A more typically colored *E. erronea* is seen above, photographed by Charles Rawlings.

Back cover: more views of *Erronea erronea* from Broome, Western Australia, including a blue shell with light faded brown spotting and a more typically colored and patterned brown spotted shell with a "blue window." Photographs by Simon Aiken (simonaiken@btinternet.com).

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 New members apply to: **Linda Powers**
 2700 N. Beach Rd. Unit D106
 Englewood, FL 34223-9223
 linda.powers1@gmail.com



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Valid molluscan taxa proposed by Rev. John Lightfoot in the “Portland Catalogue”.... and a reprieve for Daniel Solander

Harry G. Lee & Thomas E. Eichhorst

Recently in this journal Brunner and Brunner (2019) presented a lively and well-researched analysis of the “Portland Catalogue,” citing the names for several iconic shells originally printed therein and tracing the forensics that attributed their authorship to John Lightfoot. Here we try to present as complete an inventory as possible for **all** such molluscan *nomina* and offer a brief perspective on the malacological contributions of Daniel Solander, who first penned most of these *nomina*, but is not their formal author.

Dall (1921) investigated the “Portland Catalogue” mollusks and presented selections of the Lightfoot descriptions, which were always brief but often cited an illustration in an earlier work or two. A more exhaustive and definitive treatment was provided by Rehder (1967), who edited out 15 species names of shells as *nomina nuda* (nude names) due to lack of rigorous descriptions or cited illustration(s). The author added five molluscan species names overlooked by Dall and proceeded to pare the total (111) as follows: 39 junior synonyms (species validly named prior to the “Catalogue”), three junior homonyms (names selected by Lightfoot but used by prior authors), nine *nomina dubia* (descriptions and illustrations insufficient to diagnose the species), and three *nomina oblita* (forgotten names not employed in the literature between 1917 and 1967): *Voluta incompta*, *Mytilus castaneus*, and *Helix insignita*). This latter action was not fully consistent with the provisions of the second edition of the Code (ICZN, 1964: 24, Article 23b), which was then in force and required a petition to the Commission for such suppression. Inasmuch as none of these three taxa had been placed on the Official Lists two decades after Rehder’s work (Melville and Smith, 1987), the names are very likely still available. Only the first, now placed in *Nebularia* (Mitridae), is recognizable and valid; the other two are considered available but *nomina dubia* and cannot be considered valid. The “Systematic List” at the end of the paper (*Idem*: 35-40) omitted the valid species *Subnivalia* [now *Lunella*] *undulata* and *Strombus* [now *Sinustrombus*] *sinuatus*, which were given proper (and favorable) treatment in the text. Rehder’s treatment of *Placostylus elongatus* ([Lightfoot], 1786) as valid was subsequently negated by the ICZN (1992: Opinion 1662 <<https://biodiversitylibrary.org/page/12231133>>), by which *Placostylus* [as *Limax*] *fibratus* (Martyn, 1784) was made available and became, by priority, the valid name; see <<http://www.marinespecies.org/aphia.php?p=taxdetails&id=863068>>. These few adjustments produce 53 valid species-level and two generic names for mollusks, all of which occur in the **Holocene**, attributable to The Rev. John Lightfoot. Here, with two taxa [in **boldface**] requiring a more detailed analysis, are these classic names as currently employed:



The “Portland Catalogue” by John Lightfoot in 1786. The controversy that surrounded this publication was well presented by Brunner and Brunner (2019) in the last (March 2019) issue of *American Conchologist*.



Dance (1962) addressed questions of authorship of the “Catalogue,” while Dall (1921), and Rehder (1967), addressed the validity of the taxa within the “Catalogue.”

GASTROPODA, marine:

1. *Calliostoma annulatum* ([Lightfoot], 1786)
2. *Calliostoma canaliculatum* ([Lightfoot], 1786)
3. *Turbo cornutus* [Lightfoot], 1786
4. *Cookia sulcata* ([Lightfoot], 1786)
5. *Lunella undulata* ([Lightfoot], 1786)
6. *Lithopoma tectum* ([Lightfoot], 1786)
7. *Vermicularia tortuosa* ([Lightfoot], 1786)
8. *Sinustrombus sinuatus* ([Lightfoot], 1786)¹
9. *Tricornis tricornis* ([Lightfoot], 1786)¹
10. *Lambis truncata* ([Lightfoot], 1786)¹
11. *Cypraea pantherina* [Lightfoot], 1786
12. *Jenneria pustulata* ([Lightfoot], 1786)
13. *Argobuccinum pustulosum* ([Lightfoot], 1786)
14. *Murex pecten* [Lightfoot], 1786
15. *Pterynotus elongatus* ([Lightfoot], 1786)
16. *Trophon plicatus* ([Lightfoot], 1786)
17. *Volema calcarata* ([Lightfoot], 1786)^{2 3}
18. *Colubraria muricata* ([Lightfoot], 1786)
19. *Turriturris iris* ([Lightfoot], 1786)
20. *Oliva incrassata* ([Lightfoot], 1786)
21. *Turbinella angulata* ([Lightfoot], 1786)
22. *Turbinella ponderosa* ([Lightfoot], 1786)
23. *Nebularia incompta* ([Lightfoot], 1786)
24. *Voluta virescens* [Lightfoot], 1786
25. *Cymbium pepo* ([Lightfoot], 1786)
26. *Melo melo* ([Lightfoot], 1786)
27. *Melo amphora* ([Lightfoot], 1786)
28. *Cymbiola imperialis* ([Lightfoot], 1786)
29. *Cymbiola nobilis* ([Lightfoot], 1786)
30. *Adelomelon ancilla* ([Lightfoot], 1786)
31. *Harpulina arausiaca* ([Lightfoot], 1786)
32. *Conus araneosus* [Lightfoot], 1786¹
33. *Conus augur* [Lightfoot], 1786¹
34. *Conus cedonulli mappa* [Lightfoot], 1786¹
35. *Conus pulcher* [Lightfoot], 1786¹
36. *Conus quercinus* [Lightfoot], 1786¹
37. *Terebra taurina* ([Lightfoot], 1786)
38. *Hydatina zonata* ([Lightfoot], 1786)
39. *Dolabella auricularia* ([Lightfoot], 1786)
40. *Umbraculum umbraculum* ([Lightfoot], 1786)

GASTROPODA, land:

40. *Lampadion otis* ([Lightfoot], 1786)³
41. *Solaropsis undata* ([Lightfoot], 1786)³

BIVALVIA, marine:

42. *Cucullaea labiata* ([Lightfoot], 1786)
43. *Atrina rigida* ([Lightfoot], 1786)
44. *Isognomon* [Lightfoot], 1786
45. *Placuna* [Lightfoot], 1786
46. *Acanthocardia spinosa* ([Lightfoot], 1786)
47. *Dinocardium robustum* ([Lightfoot], 1786)
48. *Psammotella cruenta* ([Lightfoot], 1786)
49. *Tagelus plebeius* ([Lightfoot], 1786)
50. *Macrocallista nimbosa* ([Lightfoot], 1786)
51. *Brechites attrahens* ([Lightfoot], 1786)

BIVALVIA, freshwater

52. *Elliptio complanata* ([Lightfoot], 1786)³

Unio ovalis ([Lightfoot], 1786)^{2 3}

CEPHALOPODA:

53. *Argonauta hians* [Lightfoot], 1786
54. *Argonauta nodosus* [Lightfoot], 1786
55. *Allonautilus scrobiculatus* ([Lightfoot], 1786)

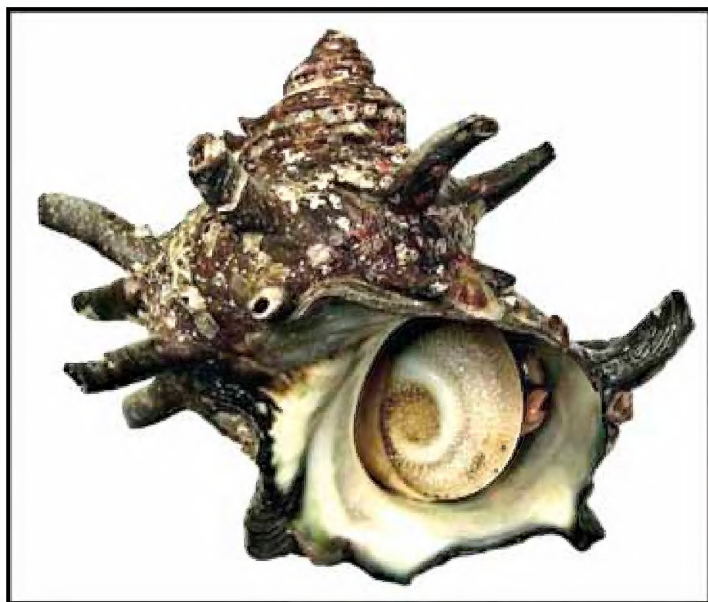


Calliostoma annulatum is variously called the purple-ring, blue-ring, or jeweled topsnail and occurs off the west coast of North America from Alaska to Baja. A common enough shell today, but not so in the 1700s. Wikipedia.com.

¹ Brackets applied in WoRMS. Only species in the Strombidae and Conidae (8 of the 52 above taxa treated therein) comply with Recommendation 41D of the *Code* (ICZN, 1999): "Author anonymous, or anonymous but known or inferred. If the name of a taxon was (or is deemed to have been) established anonymously, the term "Anon." may be used as though it was the name of the authors, however, if the authorship is known or inferred from external evidence, the name of the author, if cited, should be enclosed in square brackets to show the original anonymity."

² To be treated in a forthcoming paper

³ Not treated in WoRMS.



Turbo cornutus is called the horned turban and occurs from the Mascarene Islands east of Madagascar to China, Japan, and The Philippines. This large snail (100+ mm) is a common food item throughout its range. Wikipedia.com.



Sinustrombus sinuatus is called the laciniate conch and occurs in the southwest Pacific, especially the Philippines. This large (100-160+ mm) conch is not uncommon and has long been a favorite of collectors. Wikipedia.com.

Readers needn't necessarily despond to the Brunners' lament over posterity's expropriation of the authorship of the above valid "Portland Catalogue" taxa. Be assured Daniel Solander will retain a pedestal in the pantheon of conchological masters for his nomenclatorial initiatives in Brander (1766). Therein he provided an even greater number of iconic British fossil mollusks with valid nomina.

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Harry G. Lee
shells@hglee.com

Thomas E. Eichhorst
thomas@nerite.com



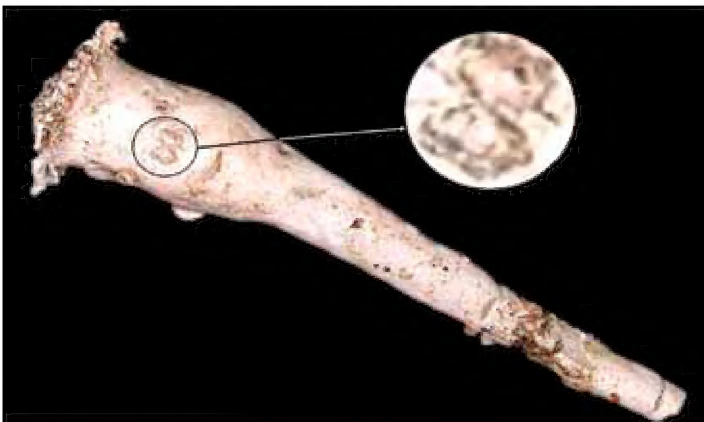
Jenneria pustulata is called Jenner's or pustulated cowrie and is a small (20-25 mm), common, shallow water species found from Peru to California. It feeds at night on hard or stony corals, apparently ignoring soft corals. Image adapted from Wikipedia.com.



Trophon plicatus is sometimes called the laciniated trophon, but it is most commonly referred to by its scientific name. This medium sized trophon (40-75 mm) is found from Brazil south to Tierra del Fuego and Antarctica. Image courtesy of Femorale.com.



Terebra taurina is called the flame auger and is found from southeastern Florida to Brazil. It ranges in size from 75-170+ mm and is usually found on a soft substrate. Large shells often show some damage and regrowth.



Brechites attrahens is an uncommon watering pot bivalve (100-200 mm) sometimes called the furbelowed watering pot. It occurs in the Indian Ocean.



Argonauta hians is called the winged argonaut or brown paper nautilus and is found in warm waters world wide. It is a pelagic species of octopod (the shell is the egg case) and ranges in size from about 75-100+ mm).

Bay scallops: very pleasing to the eye

Stephen T. Tettelbach

The first time I stalked the blue-eyed scallop was not long after Euell Gibbons' famous book was published. With the seed of foraging for our own meals firmly implanted and armed with a newly printed copy of Richards J. Heuer Jr.'s classic, "Exploring for Sea Shells on Martha's Vineyard," our intrepid group (my brother, family friends and I) set out almost every day that August 1970, to explore the salt ponds and beaches of this idyllic island for food and for shells. I probably began dreaming of such shelling expeditions at age seven, soon after my grandmother brought back a box of shells from Florida, but to now be a part of one was a life-changing experience! And little did I know this was also the start of a life-long obsession with the northern bay scallop, *Argopecten irradians irradians* (Lamarck, 1819).

Fast forward to 1983. I was just beginning my graduate research (on bay scallops, of course) at the University of Connecticut, when I got an opportunity to dive in the Niantic River. As soon as I dropped into the eelgrass beds it was clear why Nelson Marshall had immortalized this embayment as the "Bay Scallop Estuary" (Marshall 1994). Adult scallop densities were as high as 70/m²! I have never seen anything like this since. Scallop shell colors were also dazzling – bright orange and red hues, and even one black shell trimmed with white zigzag lines! Just as Jim Miller described in his *American Conchologist* article on southern bay scallops, *A. i. concentricus* (Miller 2000), I was struck with a newfound appreciation for the diversity and beauty of these magnificent bivalves.

Most northern bay scallops display one of 50 shades of grey, with the lower (ventral) valve typically lighter than the top (dorsal). Gould (1870), however, describes colors ranging from pure white to black; sometimes both valves



(Above and below): Northern bay scallops, *Argopecten irradians irradians*, in diverse colors and patterns that helped spark my life-long interest in this fascinating mollusk.



may be "...orange, ochraceous, reddish, or purplish, and sometimes they are zoned or mottled with two or more of these colors. In consequence of which, they are very pleasing to the eye..." As such, the northern subspecies is somewhat more colorful than its southern cousins (Miller 2000) and is arguably the most radiant mollusk inhabiting Northwest Atlantic waters. Elek and Adamkewicz (1990) conducted the most in-depth study to date of coloration in bay scallops. They classified the diverse array of shell colors exhibited by the northern subspecies, at Martha's Vineyard, on the basis

of three primary components: (1) background color (white, yellow or orange); (2) patterns (bands, rays or mottle & chevron) that overlie the background color and can cover a large portion (but not all) of the background or may be present as small markings (episodic); and (3) pattern colors or pigments (white, gray, yellow, slate, brown, chestnut). Background colors were defined as those present in both shell valves and whose intensity does not vary over the life of the animal; these colors are mutually exclusive of one another, but can vary in shade (e.g. the yellow background color can vary from cream to gold). Overlying patterns were classified as 'continuous,' 'ribs only,' and 'top valve only.' Pattern colors described by Elek and Adamkewicz (1990) can be found separately or in combination; they also may differ between the dorsal and ventral valves of a single individual. Even though white was found to be the predominant (94%) background color of specimens these authors examined, the most common overall dark shell color is the result of a dark overlying pattern color.

While these authors noted strong correlations between certain colors and patterns, more work is needed to understand their genetic basis. The very high diversity of bay scallop shell colors is viewed by Elek and Adamkewicz (1990) as a potential example of reflexive selection – whereby rare color varieties are maintained in populations because they may be afforded some degree of protection from visually discriminating predators such as birds or finfish; i.e. if these predators have formed a search image for the most common scallop color varieties, they may overlook rare color morphs. In New York waters, orange or yellow shells are uncommon, red is rare, and pink-purple shells are very rare.

In addition to their surprisingly complex and wonderfully bewildering variety of shell colors, *A. i. irradians* also possesses a very unusual life history. Eggs and sperm are spawned by hermaphroditic adults, usually from late May to mid-October. Following fertilization, larvae quickly develop and complete a roughly two week-long planktonic stage before settling to the bottom. Typically, these scallop pediveligers will attach to submerged aquatic vegetation (SAVs) – including eelgrass or any number of seaweed species. Scallop spat remain byssally attached in the SAV canopy for days to many weeks, safe from many of their predators, until they eventually drop to the substrate. Juvenile scallops grow very rapidly, about 10-12 mm per month, and thus often reach a size of 40+ mm by the time winter arrives. *A. i. irradians* typically do not add new shell growth between December and April. This growth stoppage results in a (usually) pronounced annual growth ring or annulus. One other point to make here about bay scallop shell color is that highlights often accompany the annual growth ring and, not uncommonly, an outright shift to another color may also occur once shell growth resumes



Adult bay scallop, *A. i. irradians*, on sand/pea gravel at 5', off Peter's Neck, Orient Harbor, NY. 3 August 2016.



Adult bay scallop, *A. i. irradians*, on *Crepidula fornicata* bottom with *Codium fragile* at 8-10' - Hog Neck Bay, Southold, NY. 30 July 2009.



Part of a day's haul, opening day of scallop season, 5 November 2018. Note the heavy growth of Atlantic slippersnails, *C. fornicata*, on most of the scallop shells.

in the spring. Most *A. i. irradians* spawn in late spring to early summer, at an age of ~1 year, and typically grow to a size of 60-80 mm by the start of the fishing season in the fall. Curiously, even if scallops survive the harvest season, almost all will die of natural causes before they reach two years of age and get to reproduce a second time (Belding 1910). This works out great for commercial scallopers as well as recreational enthusiasts and shell collectors.

Opening day of scallop season (now the first Monday in November in New York) has always been like a national holiday for me. My dive buddies and I get to reenact the Easter egg hunts of our youth. Most of our quarry ends up simmering in butter and garlic (with a little thyme thrown in), but we are also always on the lookout for specimen shells.

In the Peconic bays of eastern Long Island, NY (two bays between the North Fork and South Fork of Long Island), we have found bay scallops at depths from <1 to >40 ft, in habitats ranging from soft mud to preferred sand or shell bottoms with SAVs. In most of these habitats, the Atlantic slipper snail, *Crepidula fornicata* (Linnaeus, 1758), is abundant. Larvae produced by *C. fornicata* very commonly settle on the dorsal valve of adult (1+ yr) bay scallop shells. Unfortunately for collectors, *Crepidula* causes heavy scarring of these scallop shells, however, because scallops typically spawn later in the spring than slipper snails, the shells of juvenile (0+ yr) scallops are rarely fouled with *Crepidula*, so these often represent the highest quality specimens.

Once in a while, we get lucky and find an area where adults are free of *Crepidula* and thus clean up very nicely. One such site, in western Gardiners Bay (no GPS provided!), has a sandy bottom with patches of sparse eelgrass around and amongst large boulders. Scallops don't often survive the winter here as they get buried by shifting sediments (Tettelbach et al. 1990) during nor'easters. Right before the commercial season opened in 1998, I dove this spot and discovered that scallops had not only overwintered well, but they were really thick. I knew ahead of time the scallops looked pretty clean, so I brought down a bunch of Ziploc bags into which I could place prospective specimen shells, in hopes they might be of high enough quality to make the cut and end up in my collection. That day I used all the bags I brought with me. After two dives (over 3 hrs), I ended up with almost 9 lbs of scallops, but most memorable for me was the haul of specimen shells with spectacular hues. These included grey with white flecks, one with a mottled yellow-brown dorsal shell and a bright yellow ventral valve, and a one-of-a-kind Halloween scallop – black with orange chevrons!

The next year, we hoped for a repeat performance at our secret spot; so my friend and I purchased commercial licenses (so we could harvest more than 1 bushel) and

brought six Scuba tanks, plus plenty of Ziploc bags. Most of the scallops we found that day were nestled into shallow depressions ('potholed') in the sand, amongst eelgrass, or under *Codium*, at depths of 3-9 ft. They were so dense, I didn't know which way to turn at first, but I quickly adopted an efficient foraging strategy in which I swam in serpentine fashion, scanning along an arc moving in one direction and, after turning around, working back again on a line a few feet inshore of the previous one. And still, there were more and more scallops! After we each had dived for over 6 hours and burned through all our tanks, we amassed a harvest of 26 lbs! We sold these to a local fish market, but only after I subtracted another haul of specimen shells, including one with brown/orange/reddish rings and another with hazy cream-colored lines and flecks on a black shell.

We have also encountered other rare color varieties which manifest themselves from amongst the millions of scallops that our group has raised for our restoration efforts (Tettelbach et al. 2013, 2015). One year, diving in Northwest Harbor, off East Hampton, I found 6 adults with butterscotch juvenile shells (laid down before the annual growth ring forms) that had a black ring at the annulus and a lighter yellow/cream adult shell (laid down after the annulus). Another year, 6 pink-purple scallops were discovered amongst the usual grey varieties; as you might guess, these also reside amongst the respective collections of our group.

Skunk color morphs (dark shells with one or more white lines) naturally comprise about 3-5% of our local scallop populations and for a while we bred and planted these in large numbers in an attempt to help track the contribution of our planted stock to rebuilding populations (Tettelbach et al. in prep). We discontinued this practice after determining that skunks were experiencing disproportionately higher rates of overwintering mortality – probably stemming from the fact they have weaker shells than the usual grey color morph (Miller 2017). Uncommonly, we also found 'blond' skunks, gold or cream colored shells with white lines. Rarely, we found 'reverse' skunks, where the background color seems to be white, with a few black lines. Even rarer still, are 'reverse' skunks where the shell looks almost silver in color, and a 'double white' blond skunk, a white shell with bright white lines!

After all these years of working with and diving amongst scallops, I am still pleasantly surprised to see new shell tapestries – all very pleasing to the eye!

Acknowledgements: Many thanks to my primary scalloping dive buddies, who helped make this all possible: Christian Tettelbach, Lisa Tettelbach, Scott Hughes, Chris Smith, Brad Peterson, Joe Warren, and Will Caldwell.

Note: All specimens collected and photographed by the author, except where noted.

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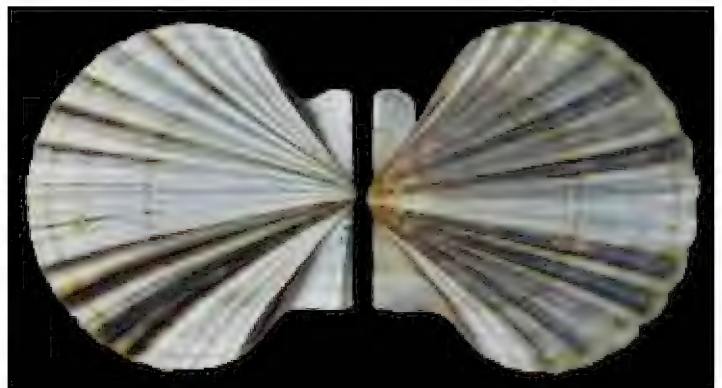
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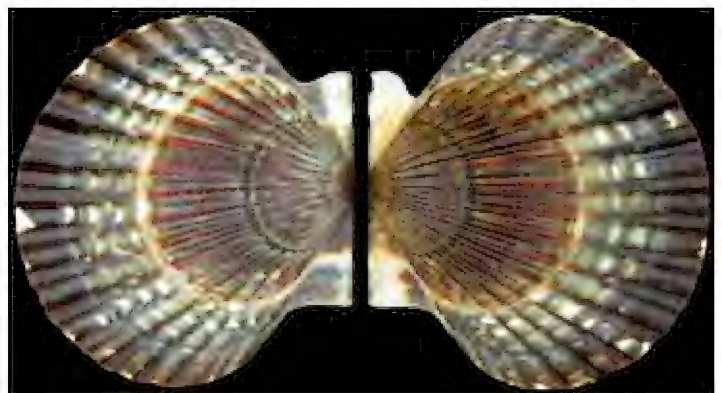
Stephen Tettelbach
Cornell Cooperative Extension
3690 Cedar Beach Rd.
Southold, NY 11971
stephen.tettelbach@gmail.com



Scallop #1: 70 mm *A. i. irradians*, collected at 3-6' on sand bottom with eelgrass, *Codium*, *Sargassum*, gravel, and shell hash – amongst boulders – western Gardiners Bay, NY. 28 October 1990. Lisa and Stephen Tettelbach, colls. Note extensive scarring of both scallop shell valves at points where *C. fornicata* had been attached. Honeycomb pattern on right (lower) shell is a colony of bryozoans.



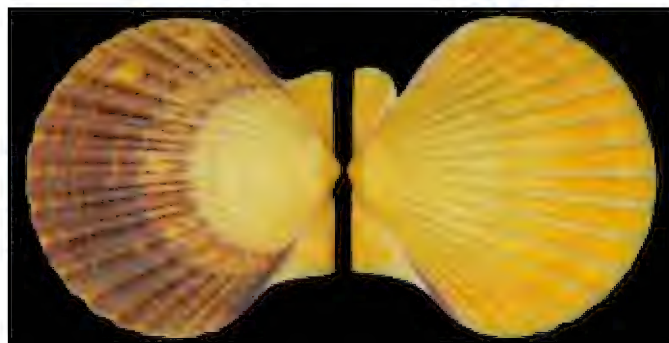
Scallop #2: 43 mm *A. i. irradians*, collected at 7-8' on sand/*Codium*/live *C. fornicata* bottom – Hog Neck Bay, NY. 3 November 2008.



Scallop #3: 67 mm *A. i. irradians*, collected at 7-10' on sand/shell/SAV bottom – E. side of Northwest Harbor, NY. 10 October 2006.



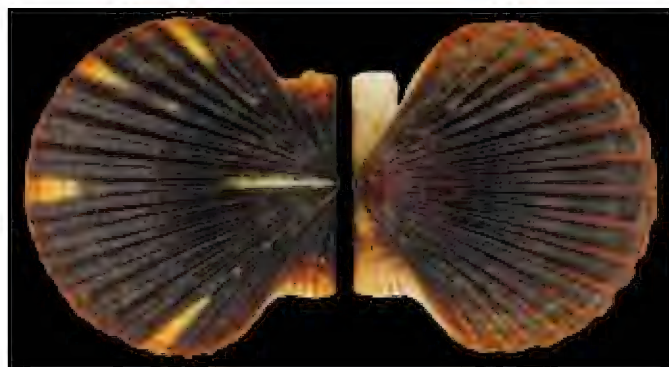
Scallop #4: 60 mm *A. i. irradians*, 8-9', sand bottom, shell hash, SAV – S. Northwest Harbor, NY. 18 May 2017.



Scallop #8: 57 mm *A. i. irradians*, 5-9', sand & eelgrass bottom – western Gardiners Bay, NY. 5 Oct 1998.



Scallop #5: 63 mm *A. i. irradians*, 5-9', sand & eelgrass bottom – western Gardiners Bay, NY. 5 Oct 1998.



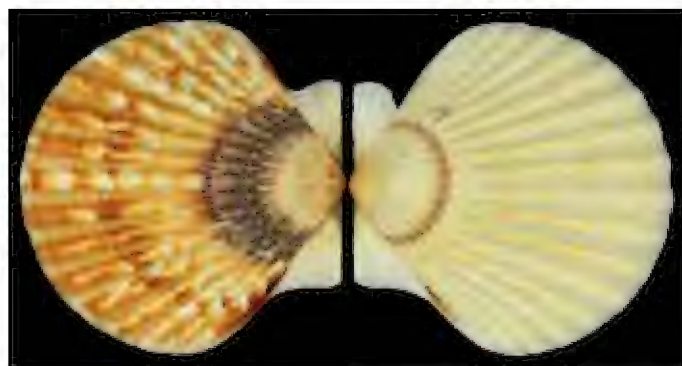
Scallop #9: 48 mm *A. i. irradians*. Dredged off Orient, NY. 23 Dec 1993.



Scallop #6: 64 mm *A. i. irradians*, 3-9', sand/shell hash/ SAV bottom – western Gardiners Bay, NY. 17 Oct 1999.



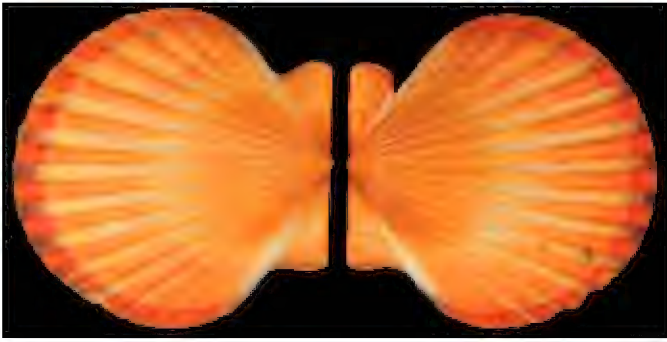
Scallop #10: 46 mm *A. i. irradians*, 5', sand, Sengecontacket Pond, Martha's Vineyard, MA. Aug 1970. Bob and Stephen Tettelbach, colls.



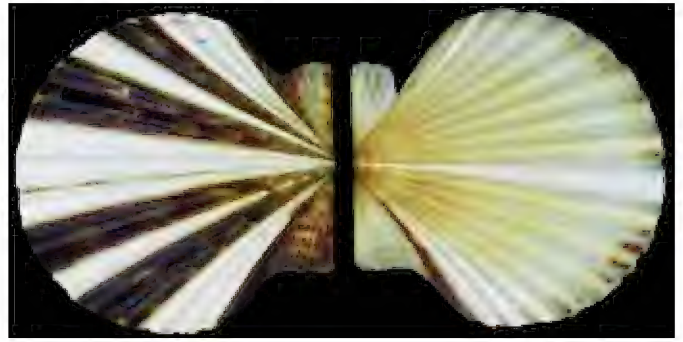
Scallop #7: 61 mm *A. i. irradians*, 5-9', sand & eelgrass bottom – western Gardiners Bay, NY. 5 Oct 1998.



Scallop #11: 48 mm *A. i. irradians*, 5-8', eelgrass/macroalgae, N. Niantic River, CT. 20/22 Sept 1983.



Scallop #12: 51 mm *A. i. irradians*, 5-8', eelgrass/macroalgae, N. Niantic River, CT. 20/22 Sept 1983.



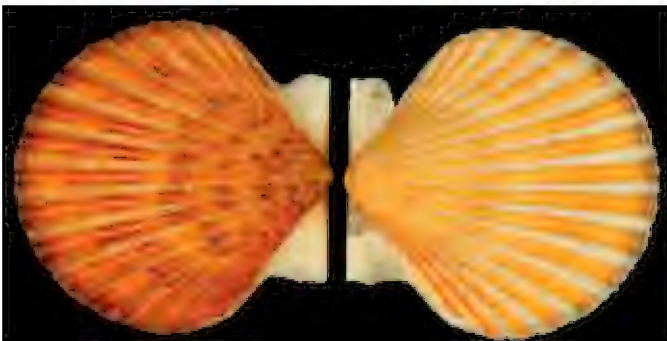
Scallop #16: 48 mm *A. i. irradians*, 8-10', sand, *C. fornicata*, *Sargassum*, W. Gardiners Bay, NY. 28 Oct 2011.



Scallop #13: 43 mm *A. i. irradians*, 5-8', dense eelgrass/macroalgae, N. Niantic River, CT. 20/22 Sept 1983.



Scallop #17: 53 mm *A. i. irradians*, 13', sand & shell hash, off S.W. Robins Island, NY. 15 June 2018.



Scallop #14: 45 mm *A. i. irradians*, 9-12', muddy-sand, dense *C. fornicata*, S. of Cedar Island, Northwest Harbor, NY. 28 Oct 2011.



Scallop #18: 66 mm *A. i. irradians*, 8-10', sand, shell hash, *C. fornicata*, E. NW Harbor, NY. 19 Sept 2006.



Scallop #15: 51 mm *A. i. irradians*, 9', sand/shell bottom, SAV cover, S. of Cedar Island, Northwest Harbor, NY. 20 May 2015.



Scallop #19: 52 mm *A. i. irradians*, hatchery raised, grown in net on longline, Orient Harbor, NY. 9 Dec 2011. Anna Ekeren, Kaitlyn O'Toole, Stephen Tettelbach, colls.



Scallop #20: 70 mm *A. i. irradians*, 5', sand – Sengecon-tacket Pond, Martha's Vineyard, MA. Aug 1970. Bob and Stephen Tettelbach, colls.



Scallop #22: 59 mm *A. i. irradians*, 7-8', sand with sparse live *C. fornicata*, shell, and *Spyridia*, south end of Northwest Harbor, NY. 9 July 2018.



Scallop #21: 48 mm *A. i. irradians*, 6-8', sand – shell bottom, E Marion, Orient Harbor, NY. 22 May 2015. Christian Tettelbach, coll.



Scallop #23: 52 mm *A. i. irradians*, 9-12', *C. fornicata* barrens, Hog Neck Bay, NY. 6 November 2007.

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CAVE BEAUTIES

S. Peter Dance & Simon P. Aiken

Some of the world's most remarkable creatures are hidden away, often in total darkness, in caves. We are used to seeing images of bats and birds entering, living in, or leaving caves, and yet relatively few vertebrate species are cave dwellers. They are greatly outnumbered by the invertebrates, including many molluscan species. Cave-dwelling mollusks are known from many parts of the world, but nowhere are they more numerous and more exotic than among the forests and jungles of South-East Asia, especially in predominantly calcareous habitats. Most of them are small or minute, often no more than a millimeter. Their size causes some modern collectors to overlook them; for other collectors the miniature perfection is all part of their fascination.

Towards the end of the 19th Century, naturalists began to explore some of the cave systems in Sarawak (Malaysian Borneo). The fastnesses of the now famous Niah Cave and other large cave systems proved to be the natural habitats of many landsnails of various families (both operculate and non-operculate). One family in particular stands out: the Diplommatinidae. The shells of some of the snails in this family are exquisitely beautiful and – at the same time – often bizarrely shaped. These characteristics are reflected in the scientific names bestowed upon some of them by their original describers, such as *Opisthostoma grandispinosum* (Godwin-Austen, 1889) and *O. mirabile* E.A. Smith, 1893. More recently discovered species have been given grotesquely apt names, such as *Diplommatina aurisdiaboli* Vermeulen, 1993 – the “Devil’s ear”.

Dozens of species of this family have now been discovered, and not only in Borneo. Neither are they limited to large caves; many have been found lurking in calcareous outcrops. As far as a diminutive land snail is concerned, a tiny recess in a calcareous outcrop is effectively a cave – a place of concealment. Many species are obtained

only from loose soil, which must be collected, sieved, and then examined microscopically.

In 1983 Peter travelled to Kalimantan in search of land snails, but logistical problems hampered his



Here Simon emerges from a limestone cave in an isolated outcrop in southern Cambodia. This relatively unexplored region conceals an impressive diversity of troglodyte mollusks, including Diplommatinidae.

progress and he collected very few snails. Simon, on the other hand, had more success recently when searching for Diplommatinidae in Cambodia and Vietnam. Fortunately, in the 1960s, Peter had been able to enlist the help of Dr. G.E. Wilford, a geologist working with the Geological Survey, Borneo Region, Malaysia. Dr. Wilford agreed to collect small bags of debris, which accumulated on scattered limestone formations in Sarawak and Sabah. Eventually Peter received bags of debris from many locations. From them he extracted an astonishing number of diminutive snail shells, including hundreds of specimens of Diplommatinidae. Between 1991 and 1994, Vermeulen published substantial reports on the Diplommatinidae in which he described many new species, including several of those found by Dr. Wilford and his team.

The habitats of some of these species of Diplommatinidae that have been found in Borneo, namely cave systems and limestone outcrops, are probably safe from human intervention for the time being, but it is a different picture elsewhere on this huge island. Habitats for wildlife are being modified or destroyed at an alarming rate. In 1983, Peter travelled many miles along the course of the Muhakkam River in Kalimantan, hoping to see true jungle. Instead he saw only tertiary forest, and the only stand of teak he encountered was about to be cut down by loggers. Quarrying of limestone on the Malay Peninsula is already blamed for the extinction of at least three Diplommatinidae species.

There are tantalizing discoveries of Diplommatinidae species from the Indian subcontinent too, and yet vast areas remain almost unexplored. Indeed, most of these cave beauties are so small, so well-hidden, and inhabit such remote places, that we may be confident that many more of them await discovery.

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All photos are © Simon Aiken (simonaiken@btinternet.com) and were taken with a Brunel® trinocular microscope and Nikon® D3200, using Helicon® stacking software and Adobe® Photoshop®. Many of the specimens illustrated are paratypes.

Key to the plate of Diplommatinidae (overleaf):

1. *Diplommatina aurisdiaboli* Vermeulen, 1993 (3.6mm, Kalimantan Selatan, Indonesia).
2. *Opisthostoma deccanense* Beddome, 1875 ((a) 1.4mm, (b) 1.4mm, (c) 1.5mm; Tamil Nadu, India).
3. *O. everetti* E.A. Smith, 1893 ((a) 2.7mm, (b) 2.9mm; Sabah, Malaysia).
4. *O. mirabile* E.A. Smith, 1893 (4.7mm, Sabah, Malaysia).
5. *Plectostoma* cf. *sciaphilum* (van Benthem Jutting, 1952) (3.5mm, Pahang, Malaysia).
6. *O. fairbanki* Blanford, 1866 ((a) 1.6mm, (b) 1.6mm; Maharashtra, India).
7. *D. miraculumdei* Vermeulen, 1993 (3.7mm, Kalimantan Selatan, Indonesia).
8. *D. tiara* Vermeulen, 1993 (2.6mm, Kalimantan Selatan, Indonesia).
9. *P. tenggekensis* Liew, Vermeulen, Marzuki & Schilthuizen, 2014 (2.1mm, Pahang, Malaysia).
10. *O. cyrtopleuron* Vermeulen, 1994 ((a) 2.7mm, (b) 3.0mm; Sabah, Malaysia).
11. *P. decrespignii* H. Adams, 1865 (2.1mm, Sabah, Malaysia).
12. *P. davisoni* Liew, Vermeulen, Marzuki & Schilthuizen, 2014 (2.0mm, Kelantan, Malaysia).
13. *O. perakensis* Godwin-Austen, 1879 (1.2mm, Perak, Malaysia).
14. *P. dancei dispersum* Vermeulen, 1994 ((a) 1.6mm, (b) 1.8mm; Sarawak, Malaysia).
15. *P. tonkinianum* (Dautzenberg & Fischer, 1905) (3.9mm, Kampot, Cambodia).
16. *O. concinnum* Fulton, 1901 (3.5mm, Sabah, Malaysia).
17. *O. jucundum* E.A. Smith, 1893 ((a) 2.9mm, (b) 2.4mm; Sabah, Malaysia).
18. *O. bihamulatum* Vermeulen, 1994 (2.7mm, Sabah, Malaysia).
19. *O. lissopleuron bigibbum* Vermeulen, 1994 (2.4mm, Sabah, Malaysia).
20. *P. transequatorialis* (Vermeulen, 1995) (2.6mm, Kalimantan Selatan, Indonesia).
21. *O. asyndeton* Vermeulen, 1994 ((a) 1.4mm, (b) 1.4mm; Kalimantan Selatan, Indonesia).
22. *O. macrostoma* Blanford, 1869 (3.4mm, Kerala, India).
23. *O. acolaston* Vermeulen, 1994 ((a) 1.3mm, (b) 1.4mm; Kalimantan Selatan, Indonesia).
24. *O. brevituba* Vermeulen, 1994 (2.3mm, Sabah, Malaysia).





The *American Conchologist* Index Project

Bruce Neville

with grateful thanks to the Indexing Committee

American Conchologist is a formidable collection of conchological and malacological information. Confused by heterostrophy and vaguely remember an article in an old issue? Planning a trip to a remote Pacific island and want to read about what to expect? Looking for an illustration of an obscure micromollusk? Need a picture of Henry Pilsbry? Do you need information about pearls for an exhibit? Wouldn't it be great if there were an index to all that content?

Back in January of 2018, the COA Board floated the idea of an index to *American Conchologist* and its predecessor, *COA Bulletin*. Somehow, I was brought into that conversation and, foolishly, I volunteered to lead a committee to prepare that index. Two indexes existed already: one to volumes 1-19, prepared for the twentieth anniversary convention in Jacksonville, and one to volumes 20-24. The committee agreed to work retroactively by decades to index the remaining volumes, then to integrate the older indexes into a single comprehensive index.

The Team consisted (alphabetically) of Amelia Ann Dick, Tom Grace, Harry G. Lee, myself, and Ed Shuller. The earlier indexes had ten sections. We agreed that we would reduce those to four: Molluscan Taxa, People and Clubs, Geography, and Other Topics. Harry and Ed took on molluscan taxa, Amy and Tom took on people and clubs, and I took on geography and other. My sister, Tina Neville, chipped in to provide editorial support.

It seems strange to recommend an index for a causal read, but as we went through those past issues, a variety of fascinating things made their way into the index. In the "People and Clubs" index there are six U.S. Presidents, two Queens of England and Great Britain, an Emperor or two, and a Pharaoh. In the "Other Topics" index, you can find murder, theft, fire-walking, and funny hats. Not just mollusks, but all sorts of creatures, from Picasso triggerfish to giant pandas to blue whales have graced the pages of our magazine.

In the "Molluscan Taxa" index, we decided to index the names as given and not try to update the taxonomy. Over 45 years, there have been just a few changes in the taxonomy. The familiar queen conch appears in the index as "*gigas*,

Eustrombus," "*gigas*, *Lobatus*," "*gigas*, *Strombus*," and "*gigas*, *Strombus (Lobatus)*"! At least as long as the specific epithet doesn't change, they're more or less close together. We've weathered the genus-wars in other families as we now suffer through them in the Conidae (whatever that is) and the Cypraeidae. I don't have a count of the species represented in the index, but the range is astounding. Our interests range widely from marine to freshwater to terrestrial to fossil, from the mundane to the truly rare.

The People and Clubs index is a trip down memory lane. The take-home lesson I get from this is, enjoy those who are here while you can! Seeing pictures of and reading about



people who were so dear and are no longer here has been bittersweet. But it's not all sad, either. The pictures of the fun of the conventions, the proud winners holding their COA trophies, and the funny anecdotes in the travelogues bring a different, happier kind of smile. And then there's always the fun of tracking down the "easter eggs" and figuring out how the likes of Marie Antoinette, Emily Dickinson, or John F. Kennedy made it into the pages of *American Conchologist*.

The Other Topics index contains just what it says, a broad mix of things: books and book reviews, non-molluscan taxa, biology, art, and anything else that didn't fit in the other indexes. This is another index full of surprises if you go looking. Among the non-molluscan critters are whale sharks, flamingos, eyeless Hitler-beetles, Pompeii worms, carnivorous plants, coelacanths, Neanderthals, Key deer, snow leopards, and strawberries. Twenty years ago, when this batch of the index started, there were articles on film photography! At the same time, we started getting articles on digital photography and digital stacking. The World Wide Web was so new that Jordan Star's web picks were a regular feature. Art works range from The Bean in Chicago to native weavings to shell-themed paintings and origami. Books mentioned range from pre-Linnaean works to classic fiction to children's books to the *Encyclopaedia Britannica* online. Television, radio, and movies are also found in the "other topics." Neither is music neglected, from opera to rock bands. Some of my favorites, to which I call your attention, are the Blaschka glass animals, Rusti Stover's amazing miniature shell store in issue 44(3), the Gamagori Fantasy, Darley Dale's *Glory of the Sea*, and Robert Lang's origami in issue 35(1). What will *you* find hidden in the entries of the "other topics"?

So, we've finished volumes 25-45 and hope to present it at the COA convention in Captiva. Because of the length, we are not planning to produce a printed version. The pdf will be available on the website for anyone to download. That takes us back to the published indexes for volumes 1-19 and 20-24, for those lucky enough to have copies. Unfortunately, integrating those turned out to be not as easy as we anticipated and is taking longer than expected. When that's ready, we'll provide a single, comprehensive index from #1 to volume 46. **[Ed. update: the 1-19 and 20-24 indexes have been scanned and it looks like we will have indexes to 1-46 at the convention - thank you Bruce and team.]**

My final plea to authors of *American Conchologist* would be these. Think of future indexers! Please give full names of anyone in your articles! So many times, we read "The show could not have happened without the untiring help of Fred and Wilma." *Fred and Wilma who?!* Taxonomy changes. If you have a long list of taxa, don't use some antiquated taxonomic order. Give the indexers a break and use something more modern and permanent, like alphabetically by specific epithet, please!

Bruce Neville
b2neville@gmail.com

COA Captiva Welcome Party



Silvard Kool

Many of you may remember Silvard as a malacologist, trained by Joe Houbbrick at the US NMNH. He wrote several papers on the evolutionary relationships among the Rapaninae, worked at Harvard's Museum of Comparative Zoology for five years, and went on to teach at Boston College. Some may also know that Silvard is a pianist, composer, and recording artist with 11 CDs to his name. He performs concerts worldwide and was frequently featured on the cable network QVC during 2001 and 2002, resulting in the sale of over 80,000 of his CDs. His music is played on Pandora and Spotify and is available on iTunes. Jim Brunner invited and sponsored Silvard to come and give a concert at COA. His concert will take place at 5:30 on Wednesday, June 19, prior to the Welcome Reception. Silvard will perform some of his versions of popular tunes as well as some of his own compositions, including the *Littorina Rag* that he wrote in honor of Joe Rosewater!



COA Captiva list of speakers

Carole Marshall

This may very well come out after the Captiva COA convention. If so, and you did not attend, then this is some of what you missed. The lineup of speakers for COA this year is really special. For those of you wishing to pick only one day, "GOOD LUCK!!!"

Since our theme is R. Tucker Abbott, our first and last programs of the sessions will be about his contributions to malacology. **Dr. José Leal** will give our first program on "Building a Shell Museum from Scratch: The Many Contributions of R. Tucker Abbott". The last program on Friday will be **Paul Callomon** on R. Tucker Abbott at the Academy of Natural Sciences of Philadelphia. Some may wonder why I put Paul last, but Paul is truly an entertaining and interesting speaker. Since I know you will want to hear Paul, you may as well stay for the business meeting. Of course, after that is our Banquet and **Dr. Henry Chaney** will present a unique banquet program on R. Tucker Abbott.

Here are a few more of what we have in store for you. We have one of our COA scholarship winners **Nicole Seiden**. We seldom get to hear from our new beneficiaries, but Nicole has graciously agreed to tell us about her research. She will give us a preview of her research, "How Pristine are Our Modern Molluscan Ecosystems and How Would We Know"? We will have **Cindy Bear** from the Randall Research Center on Pine Island who will tell us about the Calusa Indians from this area. **Dr. Charles Messing** recently was Science co-chair on an Okeanos cruise. He will talk about his experiences on that ship and what it means for science.

Gene Everson and **Silvard Kool** went on a trip to Mozambique and Madagascar. Gene will talk about that experience.

Rich Goldberg will take us land snailing in Jamaica. **Linda Ianniello** goes "Black Water Diving" as often as possible. A local dive shop takes divers out where they are in over 500 feet of water in the dark, following a glowing ball. The timing of the dive brings up creatures from the depths who come up to feed. Linda will show you photos of mollusks in larval form as well as other microscopic and larval mollusks seldom seen.

Anne DuPont will speak about "Mollusks in Medicine" and **Doug Wolfe** will tell you about the mollusks found in his own backyard. After Doug's talk and before the auction, we will have a CD of Walter C. Paine. Walter donated the wonderfully amazing shells for this year's auction (as well as last year's) and some of the footage is of him collecting. Ed Nieberger writes, "Walter was a newspaper editor, a yachtsman, ocean researcher, ocean sailboat racer, museum founder and director. The list could get longer in a hurry. Automobile racer. Beetle collector. Philanthropist. He was also the descendant of Thomas Paine, a signer of the Declaration of Independence. His

grandfather was the President of Harvard University. His father started the State Street Bank of Boston, and on and on. And he was a wonderful person." In this video we will learn a little about Walter and see him collect some of the deep sea *Pleurotomaria* that are in this auction.

On Friday, we will have **Gary Schmelz** tell us about the Chipola Formation and the story the fossils tell about the marine environment 18 million years ago.

Bruce Neville will talk about "It All Started with Linnaeus". How we got from the 1700's to today. **Pete Krull** will talk about our favorite tree snail, the Florida *Liguus*, and always making a subject that could be boring, really entertaining. **Tom Watters** will present "The Silence of the Clams".

Tom Annesley will tell us about how the cone shells were discovered to have pain reducing properties with a little surprise at the end. After **Paul Callomon's** program and after the business meeting, we will have a preview of COA 2020 in Melbourne, Florida.

As a really special Saturday morning treat, we will have **Wolfgang Grulke** on satellite from England. Paul Callomon will introduce the history of Wolfgang's new book, *BEYOND EXTINCTION: The Eternal Ocean. Climate Change and the Continuity of Life* (Paul worked with Wolfgang on the concept). We will then cross live to Dorset in the UK, to meet Wolfgang, who will give us a behind-the-scenes tour of his museum and introduce us to some specimens from his collection upon which the book is based. After that we will have a live Q&A with Paul and Wolfgang on matters arising from the challenges raised by the book. During the Bourse a special edition of 50 limited and signed copies will be for sale.



The COA end of Captiva Island for a week or so in June.

COA Academic Grants 2019

❖ COA Grants Committee

- Jann Vendetti: Chair, Curator of Mollusks, Natural History Museum of Los Angeles County
- Fabio Moretzsohn, Professor, Texas A&M University
- John Slapcinsky, Collections Manager, Invertebrate Zoology, Florida Museum

❖ Applicant/Application details

- ✧ 45 applications: USA (35), Argentina (4), Brazil (1), Canada (1), Italy (1), México (3).
- ✧ 15 grants awarded: 7 Ph.D. students, 2 masters students, 3 postdoctoral researchers, 1 undergraduate, 2 scientists (college professor and researcher).
- ✧ Geography of award recipients: USA (13), Argentina (1), and México (1).

❖ Special awards

- Paul and Heather Johnson Award: Ben Burford, Stanford University, California, USA
- Jacksonville Shell Club Award: Kendall Feliciano, California Poly. State University, Pomona, USA
- Walter Sage Memorial Award: Michelle E. Gannon, Drexel University, Pennsylvania, USA
- Clench and Turner Memorial Award: Kylie Palmer, University of North Carolina, Chapel Hill, USA
- Frederic Weiss Memorial Award: Noah Martin, University of California, Berkeley, USA
- Toto Olivera and Donald Dan Award: Sasha Seroy, University of Washington, Washington, USA
- Anne Joffe Award: *Not awarded*. No eligible proposals focused on Caribbean or Florida fauna

Total grant sum awarded: \$25,900


Recipient	Project title	Institution	Location	Academic status
Kendall Feliciano (Jacksonville Shell Club Award)	A phylogenetic analysis of the superfamily Acteonoidea (Gastropoda: Heterobranchia)	California State Polytechnic University, Pomona	California, USA	Masters student
Michelle E. Gannon (Walter Sage Memorial Award)	Examining the Suess Effect as recorded by Giant Clam shells through the Industrial Revolution	Drexel University	Pennsylvania, USA	Ph.D. student
Tricia Goulding	Using Micro-CT imaging to distinguish microgastropod species in Hawaii (Achatinellidae: Pacificellinae)	Bishop Museum	Hawai'i, USA	Post doc
Christopher Hobbs	Extraction of ancient shell DNA to inform systematics and conservation of Hawaiian Achatinellidae	Bishop Museum	Hawai'i, USA	Post doc
Ruiqi Li	Identification of potential photosymbiotic genes in marine cockles (Subfamily Fraginae)	University of Colorado Boulder	Colorado, USA	Ph.D. student
Kylie Palmer (Clench and Turner Memorial Award)	Life history patterns of modern and fossil <i>Mercenaria</i> during warm vs. cold climate conditions: Implications for conservation paleobiology	University of North Carolina, Chapel Hill	North Carolina, USA	Ph.D. student
Joshua Lord	How does ocean acidification interfere with gastropod cue sensing and habitat use?	Moravian College	Pennsylvania, USA	Scientist
Katie Marchetto	Effects of using livestock for invasive plant management on deciduous forest microclimate and terrestrial gastropods	University of Minnesota	Minnesota, USA	Post doc
Noah Martin (Frederic Weiss Memorial Award)	From Food to Firepower: Transcriptomics of nematocyst transport and storage in the nudibranch <i>Hermisenda crassicornis</i> (Aeolidida)	University of California, Berkeley	California, USA	undergraduate
Caitlin Meadows	Mustering records of Arctic exploration: Alaskan bivalve distributions in the Chukchi and Bering Seas over the last 150 years	University of Chicago	Illinois, USA	Ph.D.
Aaron Ninokawa	Drivers of calcification in marine and freshwater bivalves	University of California, Davis	California, USA	Ph.D.
Licenciada Noelia Carolina Sánchez	Conoidean gastropods from Argentine deep-waters	National University of La Plata	Argentina	Ph.D.
Sasha Seroy (Toto Olivera and Donald Dan Award)	Investigating patterns of post-metamorphic dispersal of the marine snail <i>Lacuna vincta</i> between eelgrass- and kelp-dominated habitats	University of Washington	Washington, USA	Ph.D.
Nancy Y. Suarez-Mozo (Paul and Heather Johnson Award)	Mollusks as bioindicators for inferring environmental changes in a coastal lagoon of the Yucatan Peninsula	Universidad Nacional Autónoma de México	Mexico	Scientist
Heidi Waite	Preparing the next generation for climate change: a comparative study of parental effects on larval thermal tolerance in the California mussel (<i>Mytilus californianus</i>)	University of California, Irvine	California, USA	Ph.D. student



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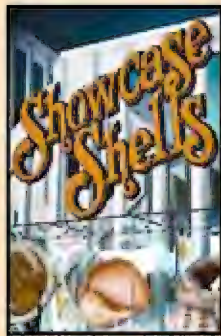
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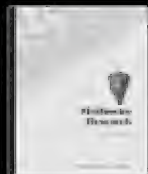
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The Marine Shells from the diverse and interesting Phyllis Diegel Collection are for sale by Families in Florida. Please visit the Website below after April 20, 2019 for all the details and to make an offer by the June 15th deadline. There is also a list of hundreds of Marine, Land and Fossil Books for sale on the Website: <https://diegelcollection.weebly.com>

“*Liguus*: The Flamboyant Tree Snails”

by Adrián González, Frederick (Pete) Krull & Luis A. Lajonchere

published by Frederick (Pete) Krull, 2018, hardcover, ISBN: 978-0-9847140-5-6,

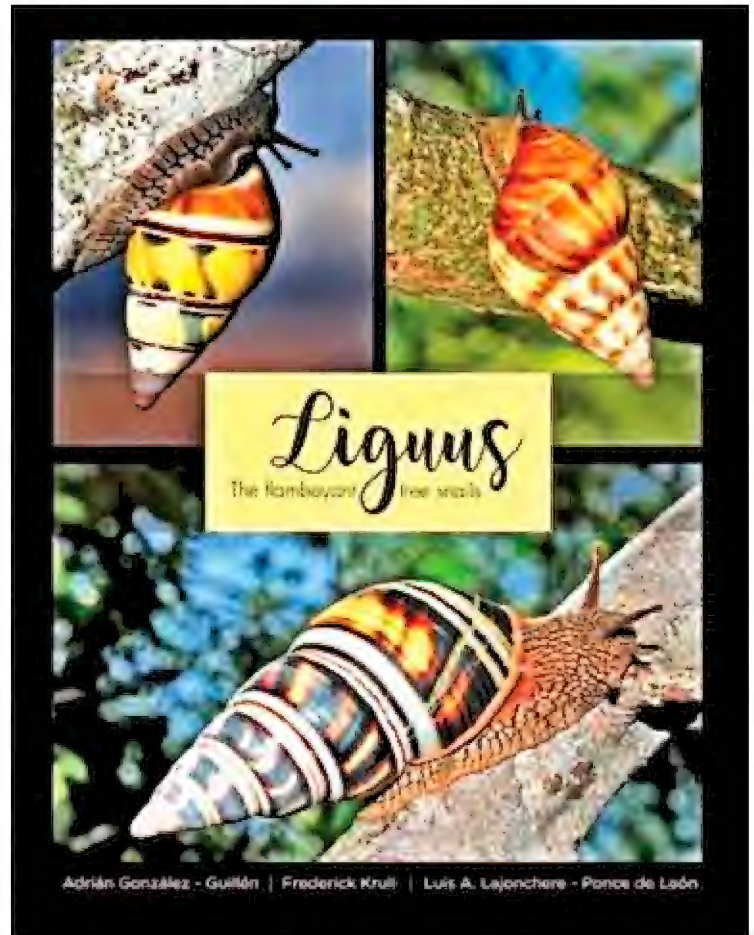
498 pages, numerous color photos, tables, charts & a CD with bibliography and added information, price: \$190.

Before we get into this massive tome itself, be aware that there were only 100 copies initially printed and I do not know the current supply level. I believe mdmshellbooks.com still have a few on their shelves (as of this date), but I also know that at the initial offering of this book at the San Diego COA Conference, every copy sold (mine was the second to last sold). So that said, what about the book?

I own two previous books by the lead author, Adrián González, and both are quality publications with superb color images (“*Polymita*: The Most Beautiful Land Snail of the World” and the now out of print, “Cuba: The Landshell Paradise”). When I saw he had combined his talents with those of Pete Krull and Luis A. Lajonchere, I knew this would be a quality publication. It is. It is also a massive book (9+ x 11+ inches, 7.5 lbs.), the size of a coffee table book and quite heavy. This means a lot of information and photographs, but it also means it is a bit cumbersome to use.

There are 10 chapters, including: historical summary, collections, palaeozoogeography, taxonomy, Cuban *Liguus*, Cuba - Florida connection, Florida *Liguus*, *Liguus virgineus*, biology and ecology, *Liguus* conservation. There is also an included CD with appendices for each chapter and a bibliography. Chapters five (Cuban *Liguus*) and seven (Florida *Liguus*) are the major portions of the book with page after page of full color plates showing color and pattern variations among *Liguus* species, subspecies, and forms. Nice identification tool for the 161 taxa (not counting numerous unofficial and manuscript names) for *Liguus*, BUT before you get to these chapters you will discover that there are only three (*L. fasciatus*, *L. virgineus*, and *L. vittatus*) or maybe five (adding *L. flamellus* and *L. blainianus*), species of *Liguus*. If you follow the authors through the early chapters you will build a thorough understanding of *Liguus* originations, development, spread, cross-breeding and isolation effects, and why there are only three or five species at present. That said, all of the various named color forms for both Cuba and Florida are extensively covered for probably the first time in a single publication. There are color plates showing different hybrids and an entire chapter devoted to *Liguus virgineus* and its many forms - far more than you may have expected.

This is a beautiful book, well worth the cover price for both professionals and amateurs. There are, however, a couple of issues that I wish had been treated differently in this work. The color plates are not numbered and that, with the lack of an index, makes searching for particular taxa rather cumbersome. The authors do include a clear acetate page that can be laid over each plate to provide numbering for individual shells (as referenced in related text), but I



would rather have seen this printed on the plate. Second, the text is in italics with photograph captions in regular font. In both cases, scientific names are presented in the same font instead of italics within regular font or regular within italic font. While this does not really cause confusion or problems using the book, it does disregard ICZN guidance for scientific nomenclature. Interestingly, the many maps seem to follow the accepted procedure of presenting scientific names in a contrasting font.

So if you are thinking, “I collect *Liguus*, should I buy this book?” The answer is yes. There is no other book that provides this depth of background information combined with clear, crisp color plates of just about any *Liguus* variation possible. If you are not a dedicated *Liguus* collector, but have a general interest (my particular case), the book is still a great addition to your shell library.

Thomas E. Eichhorst
thomas@nerite.com

“The Art of the Living Mollusk”

by Charles E. Rawlings, MD, JD

published by Peppertree Press, LLC, Sarasota, FL 2019, hardcover, ISBN: 978-1-61493-620-6

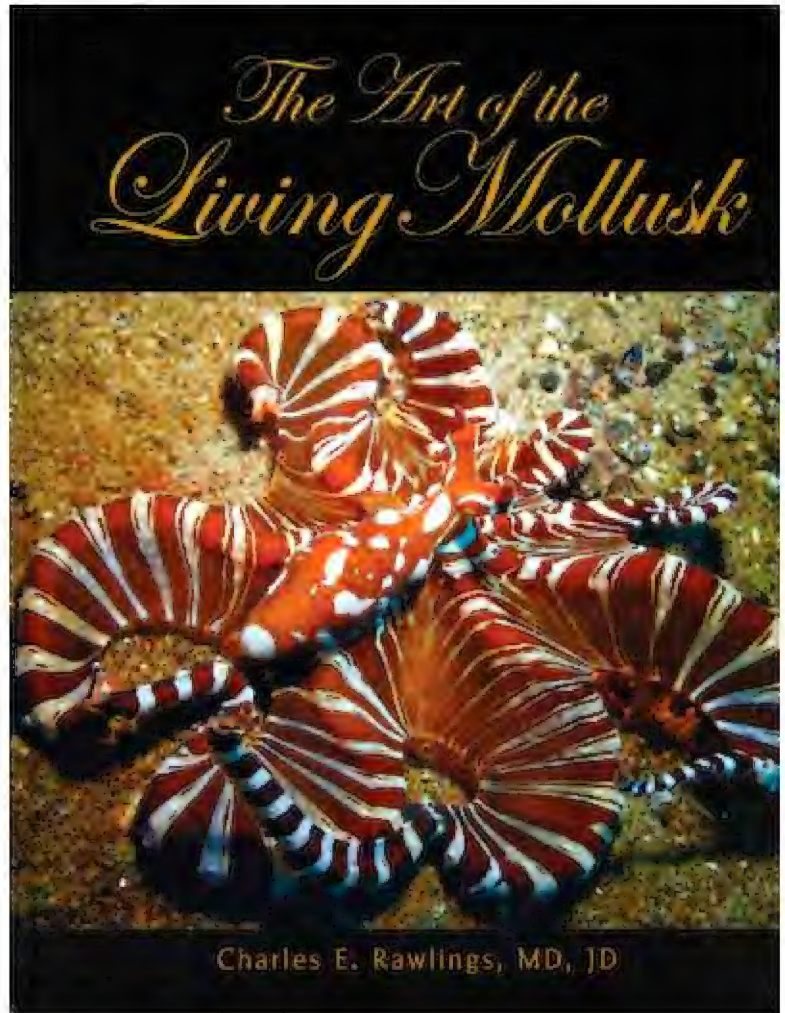
163 pages, numerous full page photos, price: \$75.

I am a big Charles Rawlings fan. His wonderful *in situ* photographs of common, not so common, and rare mollusks are often found in the pages of *American Conchologist* (thank you Charles for your years of support). This is his fourth book featuring his photographs and like his previous, “Living Shells,” “Living Mollusks,” and “Reverberations,” this book is crammed with high quality mollusk images. Unlike his previous tomes, this book is a more manageable size (9+ x 11 inches and about 3/4 of an inch thick) and will easily fit any shell library bookcase.

Quickly rifling through the pages of “The Art of the Living Mollusk,” you could get the impression of lots of different and extremely colorful shelled and shell-less mollusks. While this is certainly true, a more careful examination will prove there are also a few images that display different aspects of the same species. Charles presents overall views of these animals in their natural environments as well as close ups to show their fascinating patterns, colors, and structures. You may own a nice specimen of the pea-sized *Serratovola dondani* (Cate, 1964), but here you will find close up views of the living animal that fill an entire page with bright vivid colors. Other species might be shown head-on, a view normally had by only another coral reef, eelgrass, or sand bed denizen.

Charles is an expert scuba diver (as well as an MD, lawyer, and published author) and has explored sea bottoms and reefs literally around the world. Each photograph is accompanied by the common name (if there is one), scientific name, locality, exact depth and habitat, and comments and description about that particular encounter. In other words, aside from great photographs, there is quite a bit of natural history found on these pages. What is immediately evident is the sense of wonder Charles has towards sea life and, in particular, the amazing variety of molluscan life.

A few of my favorite images include: an unknown micro *Haminoea* species in vivid orange, green, and blue(!); the common donkey’s ear abalone (*Haliotis asinina* Linnaeus, 1758) in various shades of green and with a second image of a facial close up; the 10 mm *Prosimnia draconis* (Cate, 1973) with a sedately patterned orange shell but again displaying the rare (in mollusks) blue; and finally, the cover and an additional image of *Wonderpus photogenicus* (Hochberg, 2006). This last, perfectly named species is one



Charles ‘chased’ for a couple of decades and when finally encountered, rather than scuttle away, it bravely remained in the open and literally posed for photographs while examining Charles and his camera.

The *Wonderpus* anecdote brings up my final point about this volume. I initially leafed through as I would for any book full of great color images, but after reading a couple of the accompanying text portions, I went back and began again, this time reading all of the text as well as enjoying the images. Charles has a lively manner with words and you get a real sense of the highs and lows of capturing his living molluscan art. Heck, the cover alone is worth it!

Thomas E. Eichhorst
thomas@nerite.com

Conchologists of America – Annual Business Meeting

Bellaire Room South , Sheraton San Diego Bay Tower, Harbour Island, California

August 31, 2018

The annual business meeting was called to order in the Bellaire Room South at 3:05 PM by President Harry G. Lee, who welcomed all in attendance. He introduced himself and the other 13 board members, as follows:

Harry G. Lee, President; Steven Coker, Treasurer; Vicky Walls, COA Awards; Jann Vendetti, Academic Grants; Donald Dan, COA Endowments; Ed Shuller, Member at Large; Karlynn Morgan, Vice President; Anne Joffe, Convention Coordinator; Amy Ann Dick, Secretary; Doug Wolfe, Member at Large; Everett Long, Trustee; Linda Powers, Membership Chair; Tom Eichhorst, editor; and Phyllis Gray, Secretary. (José Leal, Immediate Past President; Marcus Coltro, Website Coordinator were absent.)

Minutes of the previous Annual Business Meeting at the 2017 COA Convention in Key West, Florida were printed in the latest *American Conchologist* and posted in the convention lobby. Alan Gettleman moved, and David Green seconded, a motion to accept the minutes as distributed and dispense with the reading. Motion carried.

Steven Coker, Treasurer reported Total Cash Assets on January 1, 2017 of \$255,149.40, a \$100,000 gain from the auction, main disbursements of \$21,000 for *American Conchologist* and \$25,000 for academic grants, and the December 31, 2017 Total Cash Assets (\$356,501.83) with the bulk in the Endowment Fund.

Dr. Jann Vandetti, Academic Grants Chairwoman, reported the Grant Awards were included in the convention packet. This year funded 14 grants and added two awards (the Toto Olivera & Donald Dan Award; and Anne Joffe Award). Look for this index next year. There will be one hard copy.

American Conchologist Editor, Tom Eichhorst, reported four issues for the year. The last issue was 48 pages, which is more economical than a smaller 42 page issue. He noted the start of an initiative for a complete index from the first issue, with the assistance of Bruce Neville and others. Look for the index in the next year for one hard copy, and then online and searchable thereafter. Biodiversity Heritage Library obtained all 46 years of issues from the Smithsonian and scanned.

Donald Dan, Endowment Chair, recapped the 2016 call from Emily and Susan Weiss and the gift of 11,000 shells from the Frederick Weiss collection which resulted in \$100,000 auction proceeds (oral and silent) last year and shells also part of the current, 2019, and 2020 auctions. He said COA is fortunate to have regular donations from two shell clubs (Jacksonville Shell Club; Boston Malacological (sponsors the Clench/Turner Award). He publishes the Grant and Endowment brochure each year and can supply copies to Shell Clubs. Last year the COA Award was added to the West Coast Shell Show in San Diego.

Vicky Wall, COA Awards Chairwoman, noted that for the 2019 year the number of trophies would increase to 12 domestic clubs and four international shows, in order to encourage people to create exhibits and enter shell shows.

Anne Joffe, Convention Coordinator, announced she is chairing the next year convention on Captiva Island, Florida. The 2020 convention will be in Melbourne, Florida and co-chaired by Alan Gettleman and Phyllis Gray. The 2021 Convention will be in the Houston, Texas area chaired by Dave Green, assisted by Linda Green.

Linda Powers, Membership Chair, reported 569 individual domestic members and 81 international members for a 2018 total membership of 650, and 37 Shell Club memberships. She named members who died since the last convention.

Neptunea Award Facilitator, Everett Long, reminded that nominations can be made soon as the voting will be earlier since the convention is two months earlier in 2019, so voting will be in April 2019. (addendum: The 2018 *Neptunea* Award recipient was Bruce Neville, at the banquet.)

There was no unfinished business.

Changes in COA leadership were announced by President Lee. Phyllis Gray resigned as Secretary after completing the term of the late Bobbie Cordy and then was elected for four years. New officers were noted as they gave their reports.

There was no response for new business from the attendees.

COA has a biennial cycle of elections. The Nominating Committee for the 2018-2020 term was appointed: Chairman, Dave Green; Tom Grace; and Rick Edwards. The March issue of *American Conchologist* listed stipulations and process. Nominees were prequalified and are willing to serve, if elected. The slate: President, Harry G. Lee; Vice President, Karlynn Morgan; Secretary, Amy Ann Dick; Treasurer, Steve Coker; Trustee, Everett Long.

Bruce Neville moved and Hank Chaney seconded a motion to accept the slate. The new leadership was unanimously elected.

At 3:27 PM a presentation was made by Anne Joffe, Chairperson, and Joyce Matthys, field trip coordinator, for the 2019 COA Convention to be held in Captiva, Florida. Dates are June 17-23, 2019 at South Seas Island Resort. Accommodations are 1 bedroom condos at a rate of \$179 plus tax per night and are valid 3 days before and after the event. Registration is open September 1, 2018 per details in the brochure included in the convention packet. In honor of Tucker Abbott's birthday there will be a snail parade. Field trips were reviewed by Joyce, and are detailed in the brochure.

Bailey-Matthews National Shell Museum will host the Tuesday night reception.

Mention of several committee chairmen completed the presentation..

Steven Coker moved and Dave Green seconded a motion to adjourn. The motion carried and President Lee adjourned the annual business meeting at 3:53 PM to accommodate set up for the banquet.

Phyllis Gray
COA Secretary
Draft August 31, 2018
hG Lee review Sept 6, 2018

2019 Shell Shows and Related Events

Following information is subject to change. Please verify with individual organization. Also, please check the COA Web page for events: conchologistsofamerica.org

June 17-23, 2019

Conchologists of America Annual Convention, Captiva Island, FL
South Seas Island Resort, 5400 Plantation Road, Captiva Island, FL 33924
Registration: Ed Shuller email: eshuller@mindspring.com
Website: conchologistsofamerica.com

July 5-7, 2019

Townsville Shell Show, 50th Anniversary Celebration
Orchid Society Hall in Kirwan, Charles Street,
Townsville, Queensland, Australia
Contact: Jack Worsfold
Email: jnw_48@yahoo.com.au

July 13-14, 2019

52nd Keppel Bay Shell Club Shell Show, Yeppoon,
Queensland, Australia
Gus Moore Pavilion at the Yeppoon Show Ground
Jean M. Offord
Tel: 61 (7) 4928-3509
Website: keppelbayshellclub@bigpond.com

August 2-5, 2019

Shanghai Shell Show 2019
Shanghai Noble Center
Hotel: No. 1688, Caobao Road,
Minhang District, Shanghai
Information: Facebook Seashell Conventions and Shows-
Public Listings

August 9-11, 2019

Jersey Cape Shell Show
The Wetlands Institute, 1075 Stone Harbor Blvd.
Stone Harbor, NJ 08247
Contact: Phil Dietz
Email: info@jerseycapeshellclub.com
phil.dietz@verizon.net
Tel: 609-425-6083

August 22-25, 2019

North Carolina Shell Show
Coastline Convention and Event Center,
501 Nutt Street, Wilmington, NC 28401
Contact: Karlynn Morgan
Email: karlynnmorgan@earthlink.net
Tel: 336-692-4492
Website: www.ncshellclub.com

August 23-September 2, 2019

Oregon Shell Show, Salem Oregon
Contact: Marici Reid
Tel: 408-891-5643
Email: marici@earthlink.net

August 23-25, 2019

4th Annual West Coast Shell Show
Casa Del Prado, Room 101, Balboa Park, San Diego, CA
Contact: David Berschauer
Tel: 949-457-9210
Email: shellcollection@hotmail.com
Website: sandiegoshellclub.com & Facebook

September 21-22, 2019

German Club Conchylia Shell Show
KULTURA, Herrenwiesenstr. 12, 74613 Oehringen, Ger.
Contact: Kurt Kreipl, Hoehenweg 6, 74613 Oehringen, Ger.
Email: meeresmuseum@t-online.de

October 26, 2019

British Shell Collector's Club Convention, Essex, England
Theydon Bois Community Centre, Theydon Bois, Epping,
Essex
Contact: Debbie Rolfe
Email: debzr58@gmail.com
Tel: 44-01474-567827

October 19-20, 2019

5th International Shell Show of Pont-A-Celles-Belgium
Ecole du Centre Chemin Celestin Freinet,
1 B-6230 Pont-A-Celles, Belgium
Contact for Sellers: alexandremarc@skynet.be

October 26, 2019

39th Annual Sydney Shell Show
Ryde Eastwood Leagues Club, Ryedale Room,
Ryedale Road, West Ryde, NSW, Australia
Contact: Steve Dean
Tel: 61 (2) 9979-5736
Email: steve@easy.com

*Information Source: Vicky Wall, COA Awards Director, 303 Wall Road, Mayodan, NC 27027, USA E-mail: vwallsheller@gmail.com Tel: 336-348-3260

Panama, 2019: And we did some shelling

John Reaves

For a week in late March, a group of friends from the Carolinas went on a shelling junket to the Las Perlas Islands off the western coast of Panama. Our intrepid shellers included: Ed Shuller, Alan Gettleman, John and Jan Reaves, Jeannette Tysor, Vicky Wall, Bill and Chury Bennight, Susan O'Connor, and Tammy Zetka. A group of interesting people on a most interesting trip; some of it was even good. This report is from the viewpoint of a "newbie" sheller.

We will skip lightly over the low-lights of the trip: such as getting booted from the hotel because a bunch of Dutch "survivor types" were invading, the directionally-challenged boat captain, and three-legged "mules." For most of us, the highlight of the trip was a visit to Isla Casaya. The inhabitants of the village have few resources. Their livelihood, as you would imagine, comes from the sea. They have few material goods, so our intrepid leader, Everett Long, encouraged us to bring clothes, stuffed animals, and treats. The ladies of the village enjoyed picking through the kids clothes and the men amused themselves by sampling the M&Ms.

We shellers, wanting to take advantage of the low tide, hit the rocks. After some instructions from the old hands, "That is not a stone, it is a Muricidae," we novices plunged right in. It is fair to say we left no stone unturned... and we had the aching backs to prove it. Among the more notable finds of the day were *Hexaplex regius*, *H. radix*, *Cypraea cervinetta*, *Conus brunneus*, *C. princeps*, and *C. nux*.

By day, we enjoyed the wonders of nature, fresh ocean breezes, and great fellowship with one another. By night, we sat on the back deck or at the kitchen table and prepared specimens for transport home. As the light faded and much work remained, some of us continued by the dim porch light, wearing headlamps.

Islas Las Perlas (Pearl Islands), off the Pacific coast of Panama, are so named because of their history of pearl production. This has given way to limited tourism. One of the islands was used as the setting for a season of "Survivor." Our group of determined shellers survived quite well, chugging around Isla Contadora on our ancient Kawasaki Mules and, on some of the outlying islands, snorkeling and flipping rocks. It was a memorable trip.

John Reaves

jjreaves2251@gmail.com



Better than a seashell: Everett Long receiving a "thank you" buss from one of the children on Isla Casaya after we delivered several suitcases of clothes and treats for them.



Some gorgeous and really dark *Macrocypraea cervinetta* (Kiener, 1844). Sadly, the dark colors will fade.



Some of the shells (*Hexaplex radix* (Gmelin, 1791), *Hexaplex regius* (Swainson, 1821), *Vasum caestus* Broderip, 1833) and *M. cervinetta*) offered to us by locals on Isla Casaya.



Astronaut Trail Shell Club

39th Annual Space Coast Seashell Festival

19-20 Jan 2019

Alan Gettleman

The Astronaut Trail Shell Club Seashell Festival show this year filled the venue with many excellent scientific and beautiful artistic exhibits.

The award winners:

Conchologists of American (COA) Trophy – Bob and Alice Pace of Miami, Florida, for “The Genus *Helicophanta* Found in Madagascar.”

du Pont Trophy – Dave and Linda Green of Missouri City, Texas, on “Worldwide *Haliotis*.”

Master’s Trophy – Kenneth Brown of Boynton Beach, Florida, for “Sampling of Family Cypraeidae of Genera.”

The major local award is the **R. Tucker Abbott self collected trophy** (as this club was Tucker’s home shell club from 1979-1994). It went to **Vicky Wall**, Mayodon, North Carolina, for “Self Collected Exhibit Adventures in the West Atlantic.”

Fossil Trophy to Bob Pace for “3 Sites Florida Fossils.”

Shell of the Show, Worldwide to Bob Pace for *Latirus mcmurry* Clench & Aguayo, 1941.

Worldwide Shell of Show, Self Collected to Jeannette Tysor of Raliegh, North Carolina, for *Fastigiella carinata* Reeve, 1848.

Florida Self Collected Shell of the Show to Vicky Wall of Mayodon, North Carolina, for *Hexaplex fulvescens* (Sowerby, 1834) from “Self Collected Exhibit Adventures in the Western Atlantic.”

Artistic Trophy to Sandy Crowell, Vero Beach, Florida, Sailor’s Valentine.



Bob and Alice Pace receive the COA Award from Astronaut Trail Shell Club President Ed Phelps.



Dave and Linda Green earn the du Pont Trophy.



Judges were Dr. Gary Schmelz of Naples, Florida; Mr. David McCallister of Melbourne, Florida, one of the proprietors of Neptune’s Treasures in Melbourne Beach, a long time local shell expert; and for Artistic, Mrs. Carole Haugh of Satellite Beach, Florida, a sheller and shell artisan. The show helps fund a scholarship for marine science graduate or doctoral candidates attending a Florida university.

(left): Kenneth Brown is presented his Master’s Trophy by Judge David McCallister.

Broward Shell Club Shell Show 12-13 Jan 2019



Bob and Alice Pace earn the COA Award as well as the du Pont Trophy for their presentation, "Upper/Lower Florida Keys – Self-Collected." They had 14 cases of display with a sampling from 2 shallow water collecting sites in Key West.



Bob and Pat Linn took home the Neil Hepler Memorial Award for their display, "A Sampling of the Olividae Family."

(right): Bob Pace also won Best in Show: Self-Collected for *Latirus mcmurray* Clench & Aguayo, 1941.



Gene Everson cleaned up with his displays. He won (1) the Len Hill Memorial Award for "One Case Wonder" and the Gerrit De Graff Memorial Single Shell for *Phyllonotus eversoni* (D'Attilio, Myers & Shasky, 1987), as well as (2) the American Museum Award for Australian Seashells – Self-Collected, (3) Best of the Best for the American Museum Award for Australian Seashells – Self-Collected, and (4) Shell of Show Self-Collected for *Haustellum langletiae* Houart, 1993.



St. Petersburg Shell Club 72nd Annual Shell Show 22-23 Feb 2019



COA Vice President Karlynn Morgan won the COA Award for her display, "Limpets – They're Not All The Same."



Bob and Alice Pace earned the du Pont Trophy for their display, "Three Fossil Collecting Sites in Florida."



Bob and Alice Pace also picked up the National Museum of Natural History Award for "One Genus – *Helicophanta* Land Snails," and the Dorothy Hanssler Award for "Two Locations (Upper & Lower) Florida Keys."



Vicky Wall won the Florida Museum of Natural History Platinum Award for "Adventures in the Western Atlantic" and the Alice Monroe Memorial Educational Award for "A Shell Collector's Journey With the Best Book." She also earned Shell of the Show – Self-Collected for her *Conus spurius* Gmelin, 1791.

The St. Petersburg Shell Show judges were: Dr. Rick Batt and Randy Allamand for scientific and Dr. Robin Harris for artistic. Other awards included: the **Selma Lawson Award** to **Pat Linn** for "A Sampling of the Olividae Family," and the **Bob & Betty Lipe Best Scientific Display** to **Greg Curry Sr.** for "Genus *Ericusa*."

An update on sinistrality

Thomas Eichhorst

American Conchologist has carried a number of articles on sinistrality over the years (June 1998, March 1999, Sept 2001, March 2002, June 2003, Sept 2004, Sept 2005, Sept 2006, Dec 2007, Sept 2008, Sept 2010, Dec 2010, March 2011, June 2011, Sept 2011, March 2012, Dec 2012, June 2012, Dec 2014, March 2017, Sept 2018 - thanks for the index to Bruce Neville and company). Whether a shell is left-handed (sinistral) or right-handed (dextral) is obviously of some interest to conchologists. This molluscan chirality or asymmetry is perhaps best introduced by COA President Harry G. Lee, who states on the jaxshells.org website:

A vast majority of the tens of thousands of marine and non-marine gastropod species are normally dextral (right-handed - i.e., the shell opening is to the right when held spire upwards) while only a limited number of taxa such as *Busycon perversum*, the few species of the fascioliid subgenus *Sinistralia*, and most of the speciose families Triphoridae and Clausiliidae, are normally sinistral (left-handed - the shell opening visible on the left when held spire upwards). However, accidents of nature do happen, and occasionally a sinistral specimen of a normally dextral species or a dextral specimen of a normally sinistral species will be found - albeit rarely to uniquely. It is likely that most such reversals are caused by a single gene mutation.

Definitive proof of a single gene responsible for shell coiling direction in the great pond snail was established by Abe & Kuroda (2019) when they used CRISPR to remove a single gene from the DNA of *Lymnaea stagnalis* (Linnaeus, 1758), resulting in sinistral shell development in a normally dextral snail. Examining embryonic development, they found that removing the gene *Lsdial* resulted in sinistral growth visible as early as the single cell stage of embryonic development. This research effort has been an ongoing passion of Reiko Kuroda, chemist and developmental biologist from Chubu University, Japan, who published earlier on the possibility of a single chiral determining gene (Stein, 2019).

We still do not know why snails coil in a given direction, but thanks to Kuroda, we now know some of the basic mechanics involved in the process and who knows what further research will turn up?

Thomas Eichhorst
thomas@nerite.com



Lymnaea stagnalis (the larger snail) has a Holarctic distribution (North America, northern Africa, Europe, and Asia). Image by Dr. Lars Peters, Wikipedia.com.



Amphidromus (*Syndromus*) *fuscolabris* Möllendorff, 1898, a sinistral species but the genus has snails that coil in both directions, often within a single species. Image by Inkhavilay et al., 2017, Wikipedia commons.

Abe, Masaanori & Reiko Kuroda. 2019. The development of CRISPR for a mollusc establishes the form *Lsdial* as the long-sought gene for snail dextral/sinistral coiling. *Development*. <http://dev.biologists.org/content/146/9/dev175976>

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